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INCREASED PERFORMANCE OF USSR COAL-CLEANING PLANTS

METHODS OF A ROSTOVUGOL' COMBINE PLANT-- Master Uglya, No 7, 1952

In coal cleaning, harmful admixtures such as ash and sulfur are removed. Reducing the ash content of coal makes it possible to decrease the amount of coke consumed in the blast furnace process and to increase the coefficient of utilization of the volume of the blast furnace. Modern techniques in coal cleaning make it possible to work coal seams which were formerly considered unsuitable for exploitation because of their high ash content.

The Nezhdannaya-Yuzhnaya Coal-Cleaning Plant of the Rostovugol' Combine cleans anthracite mined by the mine from which the plant derives its name. The technological process of cleaning coal in this plant is approximately as follows:

Coal goes by a mine skip car to a small receiving bunker, from which point it is taken by pan conveyer to a low-speed flat shaker screen where anthracite less than 100 millimeters in size is separated out. Anthracite more than 100 millimeters in size goes to a belt conveyer where rock is removed from it. After this, the coal is crushed to lumps up to 100 millimeters in size.

Anthracite less than 100 millimeters in size goes to GUP-1 vibrating screens where the culm, less than 6 millimeters in size, is separated out and taken by belt conveyers to loading bunkers and the anthracite from 100-6 millimeters in size is sent to be cleaned in washing installations.

Two products result from the cleaning: a concentrate and tailings. The concentrate goes first to a sieve for preliminary dehydration, after which it is taken to a two-sieve screen for further dehydration and for the separation of culm, less than 6 millimeters in size, from the concentrate. The wet culm is then combined with the dry culm which was obtained during the sifting process in the sorting screens.

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The cleaned and dehydrated concentrate is next subjected to sifting in a GUP-1 screen with meshes 25 and 13 millimeters in size and is sorted here into the following grades: AK coal (size of lumps: 100-25 millimeters); AM coal (size of lumps: 25-13 millimeters); AS coal (size of lumps: 13-6 millimeters). Before being loaded onto railroad cars, anthracites of grades AK and AM undergo an additional screening for a final separation of culm from the sorted coal.

A number of difficulties were encountered in mastering the new techniques and technology of coal cleaning in the plant. First of all, there were defects in the process of dehydrating the concentrate. At the suggestion of coal-washer Dorogan' and mechanic Zhukov, perforated floors were installed in the tailings end of the washing installations and the water was run into these. This measure considerably improved the process of dehydrating the concentrate.

The unsatisfactory construction of the screening installations on wooden supports caused the frequent breakdown of the latter and resulted in idle periods of the installations. Chief Kargin of the plant electric power station introduced changes in the design of the screen which stopped breakdowns.

According to plan, anthracite varying in size from 100-6 millimeters was cleaned in the washing installations. With such a wide scale in the size of lumps, many adhesions and impregnations occurred during the washing process and the quality of the coal was lower than it should have been. For example, the ash content of anthracite 25-13 millimeters in size was lowered only 1.5-2 percent after it had been cleaned in the washing installation while that of anthracite 13-6 millimeters in size was not reduced at all. Technical changes were introduced which made it possible to reduce the ash content of the AM grade concentrate 2.5-3.0 percent and of the AS grade concentrate 3.0-4.0 percent.

The plant experienced great difficulties in connection with low water supply delivered by the mine for technological purposes of the plant. At the suggestion of mechanic Zhukov, an installation was set up to recover mine water from muddy sedimentation tanks. After this, the plant never experienced shortages in the water supply.

At present, experiments are being successfully carried out with rotating brushes for cleaning belt conveyers of dust. This efficency measure has lightened work and freed several workers for other work.

For high achievements in the All-Union Socialist competition of enterprises of the coal industry during the first quarter of 1952, the Nezhdannaya-Yuzhnaya Coal-Cleaning Plant was awarded a third prize, just a year after the plant had been put into operation.

KADIYEVUGOL' TRUST MINE USES COAL-WASHING COMBINE -- Master Uglya, No 10, 1952

In Annenskaya Mine of the Kadiyevugol' Trust, coal cleaning starts at the face and is completed in a coal-cleaning installation consisting of a series of screens and the UMK-1 coal washing combine.

Coal from the mine moves by belt conveyer along an inclined shaft to the receiving bunker, from which it is fed to the GGR screen. Here it is sorted into three classes: lumps up to 20 millimeters in size, lumps from 20-75 millimeters and lumps 75 millimeters or more.

Screenings less than 20 millimeters in size are sent by conveyers to loading bunkers where coal above 75 millimeters in size also goes after rock has been removed from it in the belt conveyer designed for that purpose.

From the GGR screen, the coal goes to a receiving bunker under which a VGO-1 screen has been set up for the additional screening of fines. The screenings go without cleaning to a loading bunker, but coal 25-75 millimeters in size, making up 70 percent of the output of the mine, goes to the UMK-1 coal-washing combine.

In the coal-washing combine, the rock is separated from the coal. The cleaned coal is then removed by a scraper conveyer to a belt conveyer which transports it to a loading bunker. The rock is taken by a different conveyer to the dumps.

Such a coal-cleaning installation completely processes all coal extracted by the mine. As a result the quality of the fuel has greatly improved and 60 percent of the workers who were formerly employed here in sorting out rock have been transferred to other sections.

The operators of the combine are successfully meeting their obligations and are fulfilling their shift quotas 180 percent.

The combine is estimated to have a capacity of 25-30 tons of coal per hour. An increase in the flow of water would make it possible to push this figure up to 40 tons and the operators of the machine believe it can be made to handle 60 tons per hour.

The productivity of the UMK-1 coal-washing combine was increased primarily by decreasing idle periods. Formerly the combine stopped three or four times per day to unload dust and in this way consumed 3-4 hours. In addition to this, up to 10 tons of lump coal per day were lost along with the dust. Since the installation of the VGO-1 screen for sifting fines, the combine is cleaned only once per day and losses of coal have been eliminated.

KARAGANDA MINE PLANT INCREASES EFFICIENCY-- Master Uglya, No 10, 1952

Operators in coal-cleaning plants in the Karaganda basin are striving to carry out directives relative to improving the quality of coal. Particularly good results have been obtained by the coal-cleaning plant connected with Mine No 8. This plant not only increased its output of concentrate and reduced costs to the planned level, but actually delivered 2 rubles of saving on every ton of output. A considerable saving was achieved also by the reduction in the consumption of auxiliary materials: 5-6 rubles worth less of such materials are now being consumed per ton of concentrate than previously.

Many suggestions for further savings have been introduced. For example, nearly 100,000 tons of settlings have accumulated in the sedimentation tank of the plant. Putting into effect the suggestion to process this in a flotation installation will lead to the production of tens of thousands of above-plan tons of a coking concentrate and will result in the saving of more than one million rubles.

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